

PARTNERING WITH NASA JSC FOR COMMUNITY RESEARCH NEEDS; COLLABORATIVE AND STUDENT OPPORTUNITIES VIA JACOBS AND PSAMS INITIATIVE

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NASA Johnson Space Center's (JSC's) Astromaterials Research and Exploration Science (ARES) Division houses a unique combination of laboratories and other assets for conducting cutting-edge planetary research. These facilities have been accessed for decades by outside scientists; over the past five years, the 16 full time contract research and technical staff members in our division have hosted a total of 223 visiting researchers, representing 35 institutions. In order to continue to provide this level of support to the planetary sciences community, and also expand our services and collaboration within the broader scientific community, we intend to submit a proposal to NASA specifically for facilities support and establishment of our laboratories as a collective, PSAMS, Planetary Sample Analyses and Mission Science. This initiative should result in substantial cost savings to PIs with NASA funding who wish to use our facilities. Another cost saving could be realized by aggregating visiting user experiments and analyses through COMPRES, which would be of particular interest to researchers in earth and material sciences.

JSC is a recognized NASA center of excellence for curation, and in future will allow PIs and mission teams easy access to samples in Curation facilities that they have been approved to study. Our curation expertise could also be used for a collection of experimental run products that could be shared and distributed to COMPRES community members. These experimental run products could range from 1 bar controlled atmosphere furnace, piston cylinder, multi-anvil, CETUS (see companion abstract), to shocked products.

Coordinated analyses of samples is one of the major strengths of our division, where a single sample can be prepared with minimal destruction for a variety of chemical and structural analyses, from macro to nano-scale. The table below outlines the instrumentation available to visitors. A CT scanner will be delivered August 2016 and installed in the same building as all the other division experimental and analytical facilities. This instrument would allow users to construct a 3 dimensional model of their run product and/or starting material before any destruction of their sample for follow up analyses. The 3D printer may also be utilized to construct containers for diamond anvil cell experiments.

Ebeam Suite Instruments	Other Microanalyses	Additional Laboratories
FEI-Quanta FIB	ICP-MS	XRD
JEOL 8530F, Cameca SX-100 EPMA	TIMS, GC+Quad MS	Mossbauer
JEOL 7600 FE, 5910 LV SEM	Raman	Nanoscale 3D printer
JEOL 2500 SE, 2000 FX TEM	FTIR	Soil chemistry and mission analog labs
NanoSIMS	L ² MS (organics)	Soluble organics

Our staff scientists will work with PIs to maximize science return and serve the needs of the community. We welcome student visitors, and a graduate semester internship is available through Jacobs.